UNIVERSITÀ DEGLI STUDI DI PALERMO

Department: null

A.Y. 2012/2013

DEGREE COURSE IN PHARMACEUTICAL CHEMISTRY AND TECHNOLOGIES

Characteristics

Class of Master's Degree (MSc) on Pharmacy and industrial pharmacy (LM-13)

5 YEARS

PLANNED ACCESS

2013

Educational objectives

The single cycle five-year Degree course in Pharmaceutical Chemistry and Technologies (CTF) aims at training graduates possessing the necessary scientific grounding to work in the pharmaceutical industry and in healthcare industry at large. This course, in particular provides advanced theoretical and practical training in all the areas of the multidisciplinary process which starts form the design of potentially active molecules and brings to the synthesis, experimentation registration, production, control and marketing of drugs, in accordance with the rules of Italian and European Pharmacopoeias.
The Degree course also provides the training needed to carry out the professional practice of Pharmacist, at regional and hospital level, and, in general, of consulting, promotion and drug distribution.
Graduates of this course, in accordance with the CE Directive 85/432, may take the qualification examination for the profession of pharmacist. The Degree in Pharmaceutical Chemistry and technologies also permits graduates to take the national examination for the registration to section A of the Professional Registrar of Chemists, in accordance with the Decree of the President of Republic n. 328, of 05/06/2001.
To achieve its educational objectives, the single cycle Degree Course in Pharmaceutical Chemistry and Technologies provides students with:
1) Solid grounding in core scientific (mathematical, physical, chemical, biological, medical) subjects, capable of having a scientific approach to problem solving.
2) Advanced knowledge of the chemical and biological characteristics needed to design new biologically active molecules;
3) The capability of applying the acquired multidisciplinary scientific knowledge to the synthesis of new active ingredients;
4) The capability of developing and applying protocols for the quality control of drugs and healthcare products;
5) The capability of applying scientific and technological knowledge to the preparation and control of pharmaceutical formulae;
6) Knowledge of the national and supranational legislative frameworks relevant for the marketing of raw materials, drugs and healthcare products;
7) The necessary knowledge and learning skills to tackle PhD courses related to the relevant professions.
The structure of the first four years of the course provides students with a gradual and constant progression of their competence level.
The course is structured as a single five-year cycle, with four years of full time theoretical and practical teaching. The fifth course year is mostly devoted to practical professional training and to the preparation of the final dissertation.
The course provides:
a) Core scientific and technological competences to be applied in drug dosage and identification, in purity tests and in the preparation of galenical drugs;
b) The ability to applied the acquired knowledge to professional practice in a public pharmacy or hospital pharmacy, in accordance with specific agreements, under the guidance of a supervising pharmacist, for at least 6 months (30 credits).
The 2nd cycle Degree Course in Pharmaceutical Chemistry and Technologies, divided in curricula, also provides students with:
- Advanced methodological training providing the planning abilities and the chemical-pharmacological-technological knowledge needed to carry out research activities in universities as well as in public and private laboratories;
- The possibility of acquiring other useful knowledge with respect to the production, packaging, quality and stability control and to the evaluation of pharmaceutical products.
An adequate number of credits is given to each class specific scientific sector, both at theoretical and experimental level;

credits are spread throughout course years , thus providing graduates with advanced and complete knowledge and competences in the pharmaceutical sector.

Professional opportunities

Graduates in Pharmacy, upon passing the relevant certification, can carry out, in accordance to EEC D Directive 85/432, the profession of pharmacist.
The most important career opportunities for pharmacists imply the exercise of the following professional activities:
- Preparation of dosage form of drugs;
- Fabrication and testing of medicinal products;
- Drug control in control laboratories;
- Storage, preservation and distribution of drugs in the wholesale stage;
- Preparation, testing, storage and distribution of medicinal products in public pharmacies;
- Preparation, testing, storage and distribution of drugs in hospitals (hospital pharmacies);
- Dissemination of information and advice on drugs and health protection.

Graduates of this course are healthcare professionals who, thanks to their multidisciplinary (chemical, biological, pharmaceutical, pharmacological, toxicological and technological) skills, contribute to the achievement of the objectives of the National Healthcare System, thus responding to the changing needs of the society.
In addition, the qualification to the profession of Chemist, enables graduates, according to DPR June 5, 2001 n. 328, to register in the Section A of the Chemists professional board, for the exercise of the following professional activities:
- Chemical analysis by any method and for any purpose;
- Management of chemical laboratories performing chemical analyses;
- Testing of non-hazardous or hazardous chemicals.

Final examination features

It consists of the presentation and discussion of a dissertation related to an experimental activity on an original monodisciplinary or multidisciplinary topic, carried out at a research laboratory involving a Professor of the Faculty or at other public or private facilities in accordance to specific agreements (experimental dissertation) The course educational regulations describe the rules for requesting a dissertation, for assigning a dissertation topic and for evaluating the dissertation. The original dissertation, prepared by the student under the guidance of a supervising professor is publicly discussed in front of a Board of Professors, and final mark will be awarded out of 110.

Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
15545 - ANIMAL AND PLANT BIOLOGY *Grimaudo(PA)*	8	1	V	BIO/13	A
01900 - GENERAL AND INORGANIC CHEMISTRY *Girasolo(RU)*	8	1	V	CHIM/03	A
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE	16	1	V		
- MATHEMATICS *Bartolotta(PO)*	*8*	*1*		*FIS/07*	*A*
- PHYSICS *Bartolotta(PO)*	*8*	*1*		*FIS/07*	*A*
04677 - ENGLISH LANGUAGE	6	1	G		E
05213 - GENERAL MICROBIOLOGY *Schillaci(PO)*	6	2	V	BIO/19	A
01286 - HUMAN ANATOMY *Campanella(PO)*	6	2	V	BIO/16	A
03148 - PHARMACOLOGY AND PHARMACOGNOSIS *Notarbartolo Di Villarosa(PA)*	6	2	V	BIO/14	B
01115 - COMPUTING SKILLS	4	2	G		F
	60				

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
01542 - BIOCHEMISTRY *Allegra(PO)*	10	1	V	BIO/10	B
01933 - ORGANIC CHEMISTRY *Palumbo Piccionello(PA)*	10	1	V	CHIM/06	A
01211 - PHARMACEUTICAL ANALYSIS OF DRUGS *Barraja(PO) [A-L], Barraja(PO) [M-Z]*	10	1	V	CHIM/08	B
01799 - ANALYTICAL CHEMISTRY *Bongiorno(PA)*	8	2	V	CHIM/01	A

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
01639 - MOLECULAR BIOLOGY *Tesoriere(PO)*	6	2	V	BIO/11	B
01874 - PHYSICAL CHEMISTRY *Ciofalo(RU)*	8	2	V	CHIM/02	A
05070 - PHYSICAL METHODS IN ORGANIC CHEMISTRY *Ceraulo(PO)*	8	2	V	CHIM/06	C
	60				

Subjects 3 ° year	CFU	Sem.	Val.	SSD	TAF
01832 - FOOD CHEMISTRY *Avellone(PA)*	8	1	V	CHIM/10	C
13175 - GENERAL PHYSIOLOGY AND PATHOLOGY (MEDICAL TERMINOLOGY) - INTEGRATED COURSE	14	1	V		
- GENERAL PHYSIOLOGY *La Guardia(PQ)*	*8*	*1*		*BIO/09*	*A*
- PATHOLOGY (MEDICAL TERMINOLOGY) *La Guardia(PQ)*	*6*	*1*		*MED/04*	*A*
01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1 *Almerico(PO)*	8	1	V	CHIM/08	B
01205 - DRUG ANALYSIS *Diana(PO) [A-L], Cirrincione(PQ) [M-Z]*	10	2	V	CHIM/08	B
13181 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS AND TECHNOLOGY OF PHARMACEUTICAL FORMULATIONS - INTEGRATED COURSE	12	2	V		
- PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS *Giammona(PO)*	*6*	*2*		*CHIM/09*	*B*
- TECHNOLOGY OF PHARMACEUTICAL FORMULATIONS *Cavallaro(PO)*	*6*	*2*		*CHIM/09*	*B*
03153 - PHARMACOLOGY AND PHARMACOTHERAPY *Cannizzaro(PO)*	8	2	V	BIO/14	B
	60				

Subjects 4 ° year	CFU	Sem.	Val.	SSD	TAF
01868 - APPLIED PHARMACEUTICAL CHEMISTRY *Licciardi(PO)*	8	1	V	CHIM/09	B
01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2 *Cirrincione(PQ)*	8	1	V	CHIM/08	B
08437 - PHARMACOLOGY AND TOXICOLOGY *Plescia(PA)*	6	1	V	BIO/14	B
05184 - SPECIAL METHODOLOGIES IN PHARMACEUTICAL ANALYSIS *Lauria(PO) [A-L], Lauria(PO) [M-Z]*	10	1	V	CHIM/08	B
Optional subjects	18				B
Free subjects (suggested)	12				D
	62				

Subjects 5 ° year	CFU	Sem.	Val.	SSD	TAF
07553 - PROFESSIONAL PRACTICE	30	1	G		S
05917 - FINAL EXAMINATION	28	2	G		E
	58				

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

OPTIONAL SUBJECTS

Optional subjects	CFU	Sem.	Val.	SSD	TAF
13186 - ADVANCED MEDICINAL CHEMISTRY AND DRUG DESIGN - INTEGRATED COURSE	12	2	V		
- ADVANCED PHARMACEUTICAL CHEMISTRY *Martorana(PA)*	6	2	V	CHIM/08	B
- DRUG DESIGN *Tutone(PA)*	6	2	V	CHIM/08	B
13368 - ADVANCED PHARMACEUTICAL TECHNOLOGY AND PHARMACEUTICAL INDUSTRIAL PLANTS - INTEGRATED COURSE	12	2	V		
- ADVANCED PHARMACEUTICAL TECHNOLOGY *Cavallaro(PO)*	6	2	V	CHIM/09	B
- PHARMACEUTICAL INDUSTRIAL PLANTS *Licciardi(PO)*	6	2	V	CHIM/09	B
01548 - APPLIED BIOCHEMISTRY *Allegra(PO)*	6	2	V	BIO/10	B
01682 - PHARMACOLOGICAL BIOTECHNOLOGIES *Plescia(PA)*	6	2	V	BIO/14	B

Free subjects (suggested)	CFU	Sem.	Val.	SSD	TAF
05174 - ADVANCED METHODOLOGIES IN PHARMACEUTICAL CHEMISTRY *Diana(PO)*	6	2	V	CHIM/08	D
13266 - ADVANCED ORGANIC CHEMISTRY *Fontana(RU)*	6	2	V	CHIM/06	D
16467 - BIOCHEMISTRY OF ORGANS AND SPECIALISED TISSUES *Pintaudi(RU)*	6	2	V	BIO/10	D
13350 - DRUG SURVEILLANCE AND PHARMACOECONOMICS *Craparo(PA)*	6	2	V	CHIM/09	D
07711 - DRUG VEHICULATION AND TARGETING *Palumbo(PO)*	6	2	V	CHIM/09	D

PROPAEDEUTICAL TEACHINGS

01205 - DRUG ANALYSIS
- 01211 - PHARMACEUTICAL ANALYSIS OF DRUGS
- 01799 - ANALYTICAL CHEMISTRY

01211 - PHARMACEUTICAL ANALYSIS OF DRUGS
- 01900 - GENERAL AND INORGANIC CHEMISTRY

01542 - BIOCHEMISTRY
- 01900 - GENERAL AND INORGANIC CHEMISTRY

01832 - FOOD CHEMISTRY
- 01933 - ORGANIC CHEMISTRY

01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2
- 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1

01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1
- 01933 - ORGANIC CHEMISTRY

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

01874 - PHYSICAL CHEMISTRY

- 01900 - GENERAL AND INORGANIC CHEMISTRY
- 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE

01933 - ORGANIC CHEMISTRY

- 01900 - GENERAL AND INORGANIC CHEMISTRY

03153 - PHARMACOLOGY AND PHARMACOTHERAPY

- 13175 - GENERAL PHYSIOLOGY AND PATHOLOGY (MEDICAL TERMINOLOGY) - INTEGRATED COURSE

05070 - PHYSICAL METHODS IN ORGANIC CHEMISTRY

- 01933 - ORGANIC CHEMISTRY

05184 - SPECIAL METHODOLOGIES IN PHARMACEUTICAL ANALYSIS

- 01205 - DRUG ANALYSIS
- 01933 - ORGANIC CHEMISTRY

08437 - PHARMACOLOGY AND TOXICOLOGY

- 03153 - PHARMACOLOGY AND PHARMACOTHERAPY

13175 - GENERAL PHYSIOLOGY AND PATHOLOGY (MEDICAL TERMINOLOGY) - INTEGRATED COURSE

- 01286 - HUMAN ANATOMY
- 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE

13181 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS AND TECHNOLOGY OF PHARMACEUTICAL FORMULATIONS - INTEGRATED COURSE

- 01874 - PHYSICAL CHEMISTRY

13186 - ADVANCED MEDICINAL CHEMISTRY AND DRUG DESIGN - INTEGRATED COURSE

- 01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2

13368 - ADVANCED PHARMACEUTICAL TECHNOLOGY AND PHARMACEUTICAL INDUSTRIAL PLANTS - INTEGRATED COURSE

- 13181 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS AND TECHNOLOGY OF PHARMACEUTICAL FORMULATIONS - INTEGRATED COURSE